

Remarks in Response to the Office Action dated April 17, 2008
U.S. Patent Application Serial No. 10/823,075
Our Ref.: 80-20702276 (formerly 5974-155)

REMARKS

In the Office Action dated April 17, 2008 (the "Office Action"), claims 22-23, 26-27, 29-30 and 42-44 were rejected under 35 U.S.C. 103(a) as being unpatentable over Minami et al. (6,295,063, herein referred to as "Minami") and Gilley et al. (5,745,666, herein referred to as "Gilley"). Claim 28 was rejected under 35 U.S.C. 103(a) as being unpatentable over Minami and Gilley and LaHood (5,874,956, herein referred to as "LaHood").

Applicants respectfully traverse each of these rejections. Applicants' Remarks are preceded by quotations of related comments of the Examiner, presented in small bold-faced type.

Claim Rejections - 35 USC § 103

Claims 22-23, 26-27, 29-30, 42-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Minami et al (6295063) and Gilley et al (5745666).

Regarding claim 22, Minami et al show: a computer system operation method for displaying a computer-generated three-dimensional model of an object on a display (abstract), the method comprising the steps of:

converting the computer generated three-dimensional model of the object to a computer generated two-dimensional visualization of the object (Figures 13, 14, 15, 45, column 13 line 55 - column 14 line 25, column 16 lines 1 -25), said computer generated three-dimensional model of the object being in one of a plurality of projection planes, and said computer-generated two-dimensional visualization of the object being in a first selected projection plane from said plurality of selection planes (Figures 20, 22, 23, 35, column 16 line 59 - column 17 line 45, column 18 lines 10-55). Minami et al do not go into the interactive details of receiving a second selected projection plane for said two-dimensional visualization, displaying said two-dimensional visualization in said second selected projection plane, and generating the projection of said three-dimensional model in said second selected projection plane after said two-dimensional visualization in said second selected projection plane has been displayed, but do mention plural projection sequences (column 27 lines 25-60). Furthermore, Gilley et al show this for a computer generated model, to aid in projection sequences (column 3 lines 13-35, column 5 lines 10-40, column 7 lines 35-60). It would have been obvious to a person with ordinary skill in the art to have this in Minami et al, because it would allow convenient sequences of projections and visualizations.

Office Action, pg. 2-3.

Applicants respectfully traverse the rejection of claims 22-23, 26-27, 29-30 and 42-44. Applicants respectfully submit that the Office Action has not established a *prima facie* case of obviousness because there is no motivation to modify or combine the reference teachings and even if the

references were combined, none of the cited references, alone or in combination, describe or suggest all of the claimed limitations of at least independent claims 22, 30 and 42.

(a) Even if the references were combined, none of cited references, alone or in combination, describe or suggest all of the claimed limitations of the present invention:

Even if Minami and Gilley were combined, none of the references, alone or in combination, describe or suggest all of the claimed limitations of at least independent claims 22, 30 and 42.

As an initial matter, Applicants respectfully disagree with the assertion in the Office Action that Minami discloses “converting the computer generated three-dimensional model of the object to a computer generated two-dimensional visualization of the object” in either Figures 13, 14, 15, 45, column 13 line 55 - column 14 line 25, column 16 lines 1 -25 (Office Action, pg. 2), nor anywhere else in its disclosure. Minami does not disclose such step. Minami discloses a method of producing an exploded view of an assembly, or an animation of such assembly of parts by automating the process through a series of calculations. Figure 13 of Minami is an exploded view based on two-dimensional geometrical data, and Figures 14 and 15 are exploded views based on three-dimensional geometrical data. The accompanying text in col. 13, line 55 - col. 14, line 25, as cited by the Office Action so corroborates:

FIG. 13 shows the feature of geometrical data after completion of the processes. An exploded view can be obtained by displaying the data.

Although the description in this embodiment has been made in a case of two-dimension, the present invention can be directly realized in a case of three-dimension. In FIG. 14, for example

Minami, col. 13, lines 61 - 67 (emphasis added).

Hence, the invention disclosed by Minami can be *either* implemented in two-dimensions *or*, directly, in three dimensions. However, there is no *conversion* of a three-dimensional model of an object to a computer generated two-dimensional visualization of the object, as required by Applicants’ independent claims.

Figure 45 of Minami, also cited by the Office Action to support the disclosure of the conversion step, is a flow-chart showing the process by which using an attaching direction, a moving amount of a part to be attached is calculated so that two bounding boxes are adjacent to each other. There is no mention or suggestion of a conversion step in the Figure or in the accompanying text, which is also cited

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in the Office Action (col. 16 lines 1 -25). As a matter of fact, Minami clearly states:

In a case of two-dimension, four half-lines are drawn. In a case of three-dimension, eight half-lines are drawn.
Minami, column 16, lines 3 - 5.

Thus, Minami does not *convert* a three-dimensional model of an object to a computer generated two-dimensional visualization of the object, as required by Applicants' independent claims, but Minami discloses two embodiments which are implemented separately. One is in two dimensions, and the other is in three dimensions.

Applicants also respectfully disagree with the statement in the Office Action that Minami discloses "*said* computer generated three-dimensional model of the object being in one of a plurality of projection planes, and *said* computer-generated two-dimensional visualization of the object being in a first selected projection plane from *said* plurality of selection planes" in Figures 20, 22, 23, 35, column 16 line 59 - column 17 line 45, column 18 lines 10-55 (Office Action, pg. 2-3). Minami does not disclose such limitations for at least the reason that these limitations are tied to the conversion step, so that the two-dimensional visualization of the object is created through the conversion step and is in the first selected projection plane of the plurality of projection planes the three-dimensional model of the object is in.

The Office Action dismisses the remaining limitations in at least claims 22 and 42 by stating that:

Minami et al do not go into the interactive details of receiving a second selected projection plane for said two-dimensional visualization, displaying said two-dimensional visualization in said second selected projection plane, and generating the projection of said three-dimensional model in said second selected projection plane after said two-dimensional visualization in said second selected projection plane has been displayed, but do mention plural projection sequences (column 27 lines 25-60).
Office Action, pg. 3, emphasis added.

Firstly, Applicants respectfully submit that the dismissed claim limitations are not simply "details", they are claim limitations, and in accordance with the MPEP, all claim limitations must be considered:

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*2143.03 All Claim Limitations Must Be **>Considered< [R-6]*

*** "All words in a claim must be considered in judging the patentability of that claim against the prior art." In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious. In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988).*

MPEP § 2143.03.

Moreover, also pursuant to the MPEP, the claimed invention must be considered "as a whole" and may not be distilled down to a "gist" or "thrust" of an invention:

I. THE CLAIMED INVENTION AS A WHOLE MUST BE CONSIDERED

In determining the differences between the prior art and the claims, the question under 35 U.S.C. 103 is not whether the differences themselves would have been obvious, but whether the claimed invention as a whole would have been obvious. Stratoflex, Inc. v. Aeroquip Corp., 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983); Schenck v. Nortron Corp., 713 F.2d 782, 218 USPQ 698 (Fed. Cir. 1983)

MPEP § 2141.02, I.

Distilling an invention down to the "gist" or "thrust" of an invention disregards the requirement of analyzing the subject matter "as a whole." W.L. Gore & Associates, Inc. v. Garlock, Inc., 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984) (restricting consideration of the claims to a 10% per second rate of stretching of unsintered PTFE and disregarding other limitations resulted in treating claims as though they read differently than allowed); Bausch & Lomb v. Barnes-Hind/Hydrocurve, Inc., 796 F.2d 443, 447-49, 230 USPQ 416, 419-20 (Fed. Cir. 1986), cert. denied, 484 U.S. 823 (1987) (District court focused on the "concept of forming ridgeless depressions having smooth rounded edges using a laser beam to vaporize the material," but "disregarded express limitations that the product be an ophthalmic lens formed of a transparent cross-linked polymer and that the laser marks be surrounded by a smooth surface of unsublimated polymer."). See also Jones v. Hardy, 727 F.2d 1524, 1530, 220 USPQ 1021, 1026 (Fed. Cir. 1984) ("treating the advantage as the invention disregards statutory requirement that the invention be viewed 'as a whole'"); Panduit Corp. v. Dennison Mfg. Co., 810 F.2d 1561, 1 USPQ2d 1593 (Fed. Cir.), cert. denied, 481 U.S. 1052 (1987) (district court improperly distilled claims down to a one word solution to a problem).

MPEP § 2141.02, II.

In addition, Applicants respectfully submit that not only does Minami "not go into the interactive details of receiving a second selected projection plane for said two-dimensional visualization, displaying said two-dimensional visualization in said second selected projection plane, and generating the projection of said three-dimensional model in said second selected projection plane after said two-dimensional visualization in said second selected projection plane has been displayed, but do mention plural projection

sequences”, as stated by the Office Action (pg. 3), but in fact Minami does not teach or suggest at all at least the limitations “generating the projection of said three-dimensional model in said second selected projection plane after said two-dimensional visualization in said second selected projection plane has been displayed”, for example.

Furthermore, as discussed earlier, Minami does not disclose these claim limitations for at least the reason that they are tied to the conversion step, so that the two-dimensional visualization of the object is created through the conversion step and is in the first selected projection plane of the plurality of projection planes the three-dimensional model of the object is in.

As for the statement in the Office Actions that Minami mentions “plural projection sequences” (pg. 3), Applicants respectfully submit that “projection sequences” is not a limitation of Applicants’ claims, and it is thus irrelevant to their evaluation of patentability.

Moreover, Applicants respectfully submit that the cited portion in Minami by the Office Action with regards to this point teaches changing “assembling procedure order” on an exploded view. Comparing Figures 63 and 65 of Minami, it can be easily appreciated that parts 5902, 5903 and 5904 are arranged differently within the same vertical plane. Again, changing the *arrangement of parts* within the same plane is not relevant for Applicant’s claims. The cited portion of Minami does not teach “receiving a second selected projection plane for said two-dimensional visualization, displaying said two-dimensional visualization in said second selected projection plane, and generating the projection of said three-dimensional model in said second selected projection plane after said two-dimensional visualization in said second selected projection plane has been displayed”, which is required by Applicants.

The Office Action cites to Gilley to teach “this” for a computer generated model, to “aid in projection sequences” (Office Action, pg. 3). “This” appears to refer to the “plural projection sequences” that the Office Action alludes to. As such, whether Gilley discloses them or not is irrelevant to Applicant’s claimed invention.

Gilley does teach a method for preparing a three-dimensional curved image for editing in two-dimensions and for display (Gilley, col. 1, lines 10-12 and Figs. 2, and 3A-3E). Gilley achieves this by deriving the curved portion of a three-dimensional graphical model relative to a rectangular two-dimensional coordinate system (Gilley, col. 5, lines 15-17). Gilley states that his method comprises the

step of “projecting a *parametric surface representation* of the three-dimensional graphics model into a two-dimensional parametric space” (Gilley, col. 3, lines 18-21) and clarifies that “[t]he set of *parametric representations* of the primitives of the model is the *parametric representation* of the object” (Gilley, col. 5, lines 35-37). A primitive is defined in Gilley as:

A primitive is a mathematically defined portion of a model. For the method of the present invention, primitives are bicubic patch meshes, a set of which defines the model.
Gilley, col. 3, lines 63-65 (emphasis added)

A bicubic patch mesh is defined by Gilley as a group of adjoining bicubic patches (Gilley, col. 4, lines 4-12), which are defined in turn as:

A bicubic patch is well-known in the art and consists of a polynomial representation of a surface within bounds. The bounds of a patch are formed by curves. The curves are usually defined to correspond to straight lines in parametric space.
Gilley, col. 3, line 66 - col. 4, line 3 (emphasis added)

Thus, Gilley achieves the preparation of a three-dimensional image for editing in two-dimensions by projecting a curved surface into a rectangular coordinate-system, in a similar way to unfolding the curved surface into a flat one:

The projection of the cylinder model curved surface into parameter space forms a rectangle, as shown in FIG. 3, formed analogously to unwinding the surface of the cylinder into a plane (like flattening a paper label removed from a can).
Gilley, col. 5, lines 19 - 23 (emphasis added)

Thus, Gilley does not teach at least “converting the computer generated three-dimensional model of the object to a computer generated two-dimensional visualization of the object”, as required by Applicants’ claims. Applicants convert a three-dimensional model of an object to a two-dimensional visualization of the object, not of the unfolded, or unwrapped object. Gilley unwinds three dimensional curve surfaces in order to prepare them for editing in two-dimensions.

In addition, Gilley does not teach a computer-generated three-dimensional model of an object which is in one of a plurality of projection planes, and a computer-generated two-dimensional visualization of *the* object being in a first selected projection plane from said plurality of selection planes. Gilley does not teach either a plurality of projection planes, nor receiving a second selected projection

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plane for said two-dimensional visualization, or displaying said two-dimensional visualization in said second selected projection plane, as required by Applicants' claims. Furthermore, Gilley does not teach either to generate the projection of said three-dimensional model in said second selected projection plane after said two-dimensional visualization in said second selected projection plane has been displayed, as also required by Applicants' claims. Thus, Gilley does not cure Minami's defects.

For at least the foregoing reasons, even if combined, neither Minami nor Gilley alone or in combination teach or suggest Applicants' claimed method and computer executable code for causing a computer to display a computer-generated three-dimensional model of an object on a display of claims 22 and 42, respectively.

Regarding claim 30, in addition to that mentioned for claim 22, note a user interactive device tracking the circumference of a circle displayed on said computer screen, wherein selecting the interactive device and rotating it in a clockwise or counterclockwise direction will cause said first projection plane to rotate about an axis which is perpendicular to the computer screen (Minami et al. column 37, lines 15-50. The obviousness to have this as a tool button is the same as that mentioned in paragraph 5 of this Office Action).
Office Action, pg. 4.

As an initial matter, the arguments presented above with reference to claims 22 and 42, apply similarly to claim 30. As for the statements in the Office Action pertaining to the limitations recited in claim 30 which are not recited in claims 22 and 42, Applicants respectfully disagree in that the cited portion of Minami or the remainder of Minami for that matter, teach or suggest "a user interactive device tracking the circumference of a circle displayed on said computer screen, wherein selecting the interactive device and rotating it in a clockwise or counterclockwise direction will cause said first projection plane to rotate about an axis which is perpendicular to the computer screen", as required by claim 30. The cited portion of Minami discusses a process of producing an animation, but makes no reference to a user interactive device such as that claimed by Applicants.

Thus, even if combined, neither Minami nor Gilley alone or in combination teach or suggest Applicants' claimed projection plane manipulator tool of claim 30.

b) There is no motivation to modify or combine the reference teachings:

Even if Minami and Gilley included a description of each of the claimed limitations of at least independent claims 22, 30 and 42, as stated in the Office Action, which they do not, Applicants respectfully submit that there is no motivation for one of ordinary skill in the art to modify Minami in view Gilley.

There are three possible sources for a motivation to modify a reference: the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons of ordinary skill in the arts. *In re Rouffet*, 149 F.3d 1350, 1357, 47 U.S.P.Q.2d 1453, 1457-58 (Fed. Cir. 1998). None of these three possible sources have been demonstrated in the Office Action.

Applicants respectfully submit that it would not have been obvious to modify Minami in view of Gilley, as Minami is concerned with automating the process of creating exploded views in either two or three dimensions. One of skill in the art concerned with the problem of manipulating the projection plane of a three-dimensional model in computer aided design and computer aided manufacture applications would not arrive at Applicants' claimed invention through Minami's teachings. Minami does not teach converting a three dimensional model to a two-dimensional visualization, nor generating a three-dimensional model in a second projection plane after the two-dimensional visualization in that second plane has been displayed. Minami does not teach a projection plane manipulator tool either, such as that claimed by Applicants. Thus, one of skill in the art would not and could not obtain any of the advantages offered by Applicants' claimed invention (e.g. decreased computing time and increased productivity) even if Minami was consulted. Gilley is concerned with preparing a three-dimensional curved image for editing in two-dimensions and for display. Gilley does not teach the projection plane manipulator tools of the invention, nor converting the computer generated three-dimensional model of the object to a computer generated two-dimensional visualization of the object, or a plurality of projection planes, nor receiving a second selected projection plane for said two-dimensional visualization, or displaying said two-dimensional visualization in said second selected projection plane, as required by Applicants' claims. Furthermore, Gilley does not teach either to generate the projection of said three-dimensional model in said second selected projection plane after said two-dimensional visualization in said second selected projection plane has been displayed, as also required by Applicants' claims. Thus, one of skill concerned with learning these tools for manipulation of projection planes of three dimensional models would not be

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motivated to resort to Gilley either. Even if one of skill in the art were to combine Minami and Gilley, it would simply not be possible to arrive at Applicants' claimed invention. Hence, even if Minami and Gilley were to be combined, one of skill in the art would not have a reasonable expectation of success.

Applicants respectfully further submit that the Office Action has not demonstrated a finding that there was some teaching, suggestion, or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the references or to combine the reference teachings, as required by the MPEP § 2143(G).

Applicants respectfully submit that this appears to be a case in which the Office Action's conclusion of "obviousness" is merely based on an application of hindsight reasoning gained by the review of the present application. Such hindsight reasoning is impermissible.

As the MPEP notes:

The tendency to resort to "hindsight" based upon applicant's disclosure is often difficult to avoid due to the very nature of the examination process. However, impermissible hindsight must be avoided and the legal conclusion must be reached on the basis of the facts gleaned from the prior art.

MPEP § 2142; and

When applying 35 U.S.C. 103, the following tenets of patent law must be adhered to:(...)

(C) The references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention (...) Hodosh v. Block Drug Co., Inc., 786 F.2d 1136, 1143 n.5, 229 USPQ 182, 187 n.5 (Fed. Cir. 1986).

MPEP § 2141 II

For at least the foregoing reasons, Applicants respectfully submit that the Office Action has not made a *prima facie* case of obviousness. Also for at least the foregoing reasons, Applicants respectfully submit that at least pending independent claims 22, 30 and 42 are distinguishable over Minami and Gilley alone or in combination, and notice to the effect that these claims are in condition for immediate allowance is respectfully requested.

Claims 23 and 26-27 and 29 depend from independent claim 22, and define further steps of the method. Claims 43-44 depend from independent claim 30, and define further features of the projection

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plane manipulator tool. Accordingly, these claims are patentable for the reasons noted above with respect to claims 22 and 30 as well for the additional steps recited therein. Accordingly, notice to the effect that dependent claims 23, 26-27, 29 and 43-44 are in condition for immediate allowance is respectfully requested.

Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Minami et al (6295063) and Gilley et al (5745666) and LaHood (5874956).

Regarding claim 28, in addition to that mentioned for claim 30, neither Minami et al nor Gilley et al go into the details that the manipulator tool includes a plurality of quadrants, each of said plurality of quadrants representing a predetermined number of degrees of rotation in a predetermined direction around an orthogonal axis, but see paragraph 10 in this Office Action and note the rotating and obviousness to have this in a manipulator tool. Now, LaHood does show the plurality of quadrants feature as described (Figure 5, column 6 for example). This feature in the combination already suggested by Minami et al and Gilley et al then would be such that receiving a second projection plane includes the step of receiving a selected one of said plurality of quadrants and rotating said first selected projection plane said predetermined number of degrees and in said predetermined direction around said orthogonal axis associated with said selected quadrant. It would in fact have been obvious to a person with ordinary skill in the art to have this in the combination of Minami et al and Gilley et al, because it would allow convenient rotating of the projection plane.

Office Action, pg. 5-6.

Applicants respectfully traverse this rejection for at least the reason that claim 28 depends from independent claim 22, and defines further steps of the method. Accordingly, this claim is patentable for at least the reasons noted above with respect to claim 22 as well for the additional steps recited therein. Accordingly, notice to the effect that dependent claim 28 is in condition for immediate allowance is respectfully requested.

In addition, Applicants respectfully submit that LaHood does not cure Minami's and Gilley's defects. LaHood teaches an apparatus and method to permit a viewer navigation and manipulation within a three-dimensional graphical experience displayed by a computer. However, LaHood does not teach converting a computer generated three-dimensional model of an object to a computer generated two-dimensional visualization of the object, said computer generated three-dimensional model of the object being in one of a plurality of projection planes, and said computer-generated two-dimensional visualization of the object being in a first selected projection plane from said plurality of selection planes, nor receiving a second selected projection plane for said two-dimensional visualization, displaying said two-dimensional visualization in said second selected projection plane, nor generating the projection of

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said three-dimensional model in said second selected projection plane after said two-dimensional visualization in said second selected projection plane has been displayed. Moreover, LaHood does not teach the projection plane manipulator tool claimed by Applicants. Thus, Applicants respectfully submit that the claimed invention is distinguishable over Minami, Gilley and LaHood alone or in combination, and notice to the effect that these claims are in condition for immediate allowance is respectfully requested.

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CONCLUSION

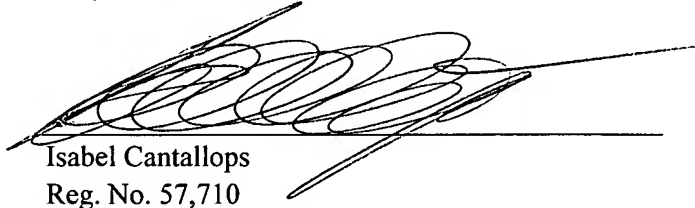
For the foregoing reasons, allowance of this application is courteously urged.

Claims 22-23, 26-30 and 42-44 are now pending and believed to be in condition for allowance. Applicants have made a diligent effort to place this application in better condition for immediate allowance and notice to this effect is earnestly solicited. The Examiner is respectfully requested to reconsider the application at an early date with a view towards issuing a favorable action thereon. If upon the review of the application, the Examiner is unable to issue an immediate notice of allowance, he is respectfully requested to telephone the undersigned at (212) 895-1376 with a view towards resolving the outstanding issues.

The Commissioner is authorized to charge and fees required in connection with this submission to Deposit Account No. 50-0521.

Respectfully submitted,

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